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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,373	02/17/2004	Marc Schaepkens	133348-1	7897

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GE TRADING & LICENSING
GE GLOBAL RESEARCH
ATTN: BRANDON, BLDG. K1-2C11
1 RESEARCH CIRCLE
NISKAYUNA, NY 12309

EXAMINER	
KRUER, KEVIN R	
ART UNIT	**PAPER NUMBER**
1773	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/779,373	SCHAEPKENS ET AL.	
	Examiner	Art Unit	
	Kevin R. Kruer	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-8 and 11-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-8 and 11-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 6-8, 11, 13, and 14 are rejected under 35 USC 103(a) as being unpatentable over Chung et al (US 6,836,070) in view of Moser (US 2003/0148139) and Chopra (US 6,413,858) for reasons of record.

Chung teaches an electro-luminescent display with a substrate comprising an anode, and a cathode, and a barrier layer protective layer. A transparent sealing structure is glued to the top of the substrate wherein the transparent sealing structure has an adhesive layer glued to the protection layer, a plurality of organic resin layers formed on the adhesion layer, a plurality of inorganic barrier layers disposed between the organic resin layers, a flexible polymer film formed on the organic resin layer, and a hard coat formed on the flexible polymer layer (abstract). Herein the flexible polymer layer and the substrate are understood to read on the claimed "first" and "second" polymeric substrate layers. The organic layers are herein understood to read on the claimed organic polymer materials. The inorganic barrier layers are herein understood to read on the claimed inorganic material and may comprise metal oxides or nitrides (col 3, lines 39+).

Chung does not teach that the composition of the organic polymer layer should vary substantially continuously across the thickness of the composite. However, Moser teaches a polymeric diffusion barrier wherein a polarity gradient is established through the layer in order to improve adhesion of the polymeric layer to the adjacent layer (0022). Furthermore, metal particles may be dispersed therein in gradient form (0016). By forming a composition gradient across the organic polymer layer, the properties of the organic polymer layer may be tailored. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an organic polymer layer with a gradient composition as the organic polymer layer of the composite taught in Chung. The motivation for doing so would have been to allow for tailoring of the barrier layer so that it possesses the desired properties.

Chung also does not teach that the composition of the inorganic layer should vary substantially continuously across the thickness of the composite. However, Chopra teaches the barrier properties of a metal nitride barrier layer may be improved by utilizing a graded metal nitride layer (abstract and col 7, lines 17+). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a graded metal nitride layer as the metal nitride layer taught in Chung. The motivation for doing so would have been to improve the barrier properties of said layer.

3. Claims 1, 4-8, and 11-14 are rejected under 35 USC 103(a) as being unpatentable over Graff et al (US 6,492,026) in view of Moser (US 2003/0148139) and Chopra (US 6,413,858) for reasons of record.

Graff teaches a high temperature substrate comprising at least one barrier stack adjacent to the polymer substrate (abstract). The substrate may be coated with additional layers such as scratch resistant layers (col 2, lines 64+) or electrically conductive layers (col 5, lines 1+). There is optionally a second substrate applied to the barrier stack on the side opposite the first substrate layer (col 4, lines 57+). The barrier stack comprises barrier layers and polymer layers (col 3, lines 57+). The barrier layers may comprise metal oxides, oxynitrides, nitrides, and the like (col 6, lines 1+). Said alternating layers of polymers and barrier layers are herein understood to read on the "diffusion inhibiting barriers." The polymer layers are acrylate polymers (claim 10). Said barrier may be utilized with LEDS, LEPs, ED, LCDs and the like (col 2, lines 3+). When utilized, said devices are disposed between a pair of electrodes.

Graff does not teach that the composition of the organic layer should vary substantially continuously across the thickness of the composite. However, Moser teaches a polymeric diffusion barrier wherein a polarity gradient is established through the layer in order to improve adhesion of the polymeric layer to the adjacent layer (0022). Furthermore, metal particles may be dispersed therein in gradient form (0016). By utilizing a barrier with a compositional gradient, the properties of the barrier layer may be tailored. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a polymeric barrier layer with a gradient composition as the polymeric barrier layer of the composite taught in Graff. The motivation for doing so would have been to allow for tailoring of the barrier layer so that it possesses the desired properties.

Graff also does not teach that the composition of the inorganic layer should vary substantially continuously across the thickness of the composite. However, Chopra teaches the barrier properties of a metal nitride barrier layer may be improved by utilizing a graded metal nitride layer (abstract and col 7, lines 17+). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a graded metal nitride layer as the metal nitride layer taught in Graff. The motivation for doing so would have been to improve the barrier properties of said layer.

4. Claims 1, 4-5, 7, 8, and 11-15 are rejected under 35 USC 103(a) as being unpatentable over Silvernail (US 6,576,351) in view of Moser (US 2003/0148139) and Chopra (US 6,413,858) for reasons of record.

Silvernail teaches an organic photoelectronic device structure and a method of making the same. The structure comprises a first barrier resin comprising a first composite stack and a second composite layer stack attached to the first composite layer stack (abstract). The composite layer stack comprises a first polymer substrate layer, at least one first planarizing layer and at least one first high-density layer, while the second composite layer stack similarly comprises a second polymer substrate layer, at least one second planarizing layer and at least one second high-density layer (abstract). Preferably, the stacks will comprise two or more planarizing layers and two or more high density layers (col 2, lines 41+). The planarizing layers comprise fluorinated polymers, polyacrylates, and the like. The high density layers comprise metal oxides, nitrides, carbides, and oxynitrides. Said multi-layer barrier stacks are herein understood to read on the "diffusion inhibiting barriers." The substrate layers

comprise polyolefin, polyimide, polyethersulphone, and polyester (col 2, lines 53+). The substrates are arranged such that the stacks are between said substrates (col 2, lines 26+).

Silvernail does not teach that the composition of the organic layer should vary substantially continuously across the thickness of the composite. However, Moser teaches a polymeric layer wherein a polarity gradient is established through the layer in order to improve adhesion of the polymeric layer to the adjacent layer (0022). Furthermore, metal particles may be dispersed therein in gradient form (0016). By utilizing a polymer layer with a compositional gradient, the properties of the barrier layer may be tailored. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a polymeric layer with a gradient composition as the polymeric layer of the composite taught in Silvernail. The motivation for doing so would have been to allow for tailoring of the barrier layer so that it possesses the desired properties.

Silvernail also does not teach that the composition of the inorganic layer should vary substantially continuously across the thickness of the composite. However, Chopra teaches the barrier properties of a metal nitride barrier layer may be improved by utilizing a graded metal nitride layer (abstract and col 7, lines 17+). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a graded metal nitride layer as the metal nitride layer taught in Silvernail. The motivation for doing so would have been to improve the barrier properties of said layer.

Response to Arguments

Applicant's arguments filed October 16, 2006 have been fully considered but are moot in view of a new grounds of rejection.

Applicant argues that none of the applied references teaches or suggests a barrier comprising a material, the composition of which varies substantially continuously across the thickness of thereof where the barrier comprise an organic ***and*** inorganic material. Applicant argues such a limitation is claimed in claims 1 and 8, but the examiner notes a composition comprising both a polymer material and at least an inorganic material is claimed only in claims 4 and 11. Claims 1 and 8 require that the material be at least one of an organic material or inorganic material. With regards to applicant's arguments (as they apply to claims 4, 11 and claims that depend therefrom), the examiner respectfully disagrees with applicant's reading of the references. The examiner has relied upon Moser to teach a barrier material comprising an organic and inorganic material. Moser teaches a polymeric diffusion barrier composition comprising a polymer and metallic particles. The metallic particles are dispersed such that they "diminish (or increase) continuously in the direction of the surface (0016)." If the metallic particle concentration varies continuously across the thickness of the layer then the concentration of the polymer component will also necessarily vary continuously across the thickness of the layer. The examiner concedes there is no explicitly teaching of said component varying continuously across the thickness of the layer but say conclusion flows logically from the explicitly teaching that the metal particle concentration varies continuously across the thickness of the layer.

For the reasons noted above, the rejections are maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R. Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin R. Kruer
Patent Examiner-Art Unit 1773